NANYANG PRIMARY SCHOOL

PRIMARY FOUR SCIENCE

SEMESTRAL ASSESSMENT 1
2011

BOOKLET A

Date : 10 May 2011

Duration : 1 h 45 min

Name : _____ (

Class: Primary _____ : ( )

Marks Scored:

Booklet A:		**60**
Booklet B :		**40**
Total :		**100**

Parent's signature: .....

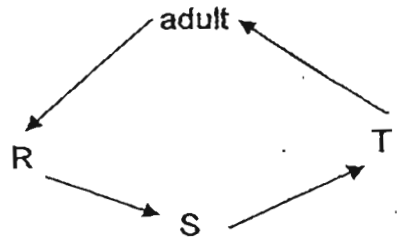
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 21 printed pages including this cover page.

Section A (30 x 2 marks = 60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer.
Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. The diagram below shows the life cycle of an insect.

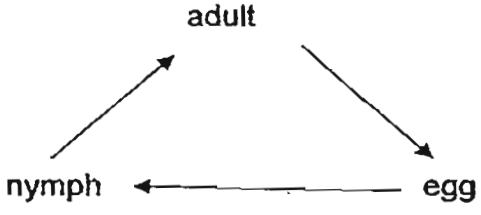


When does moulting occur during its life cycle?

(1) R (2) S

(3) R to T (4) R to adult

2. The diagram below shows the life cycle of an organism.



Which one of the following animals has a similar life cycle as the above organism?

(1) guppy (2) pigeon

(3) dragonfly (4) butterfly

3. Which of the following statement(s) is/are true of platypus and penguin?

A Both have a 3-stage life cycle.
B Platypus gives birth to young alive while the penguin lays eggs.
C Platypus provides the young with milk but the penguin provides the young with fish.

(1) B only
(2) C only
(3) A and C only
(4) A, B and C only

4. Some plants reproduce by spores. Hundreds or thousands of spores could be produced each time. Which one of the following statements below explains why such plants produce a large number of spores each time?

(1) To allow such plants to grow quickly.
(2) The spores may be eaten by other organisms.
(3) The spores can be spread out to avoid overcrowding.
(4) To increase the chance for the young of such plants to germinate.

5. Mavis planted a bean seed in her garden. She recorded the height of the seedling from Week 1 to 5 as shown in the table below.

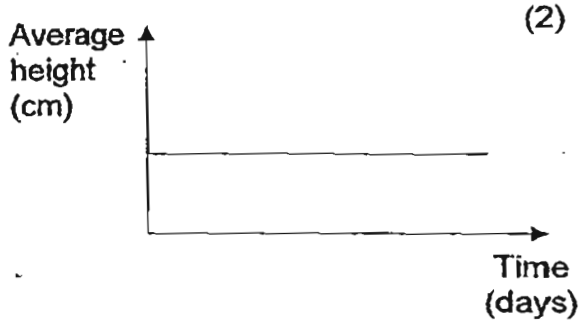
Week	Height (cm)
1	3
2	?
3	15
4	19
5	24

The seedling **grew the most in height** from Week 2 to 3. What is the possible height of the seedling at Week 2?

(1) 7 cm
(2) 9 cm
(3) 10 cm
(4) 11 cm

6. Some green beans were placed in a pot. The beans took one day to germinate. After the tenth day, the seedlings were placed in a freezer. The average height of the seedlings in the pot was recorded for a total of twenty days. Which graph represents the pot of seedling that is placed inside the freezer?

(1)



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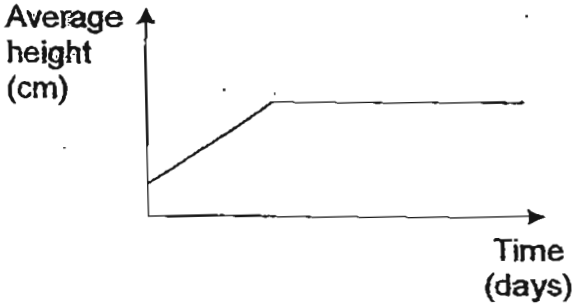

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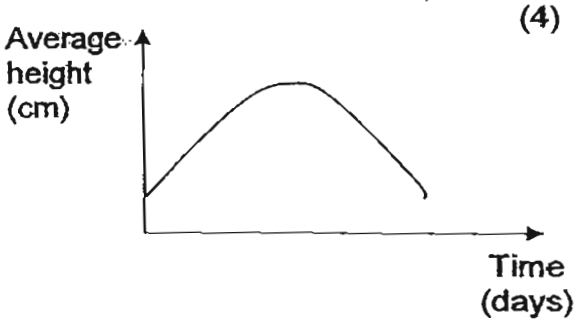

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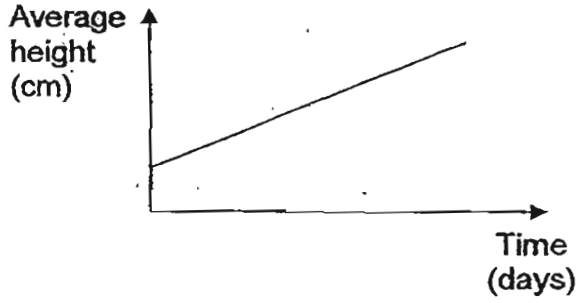


7. Which one of the following statements is **false** about the larva of a mosquito?

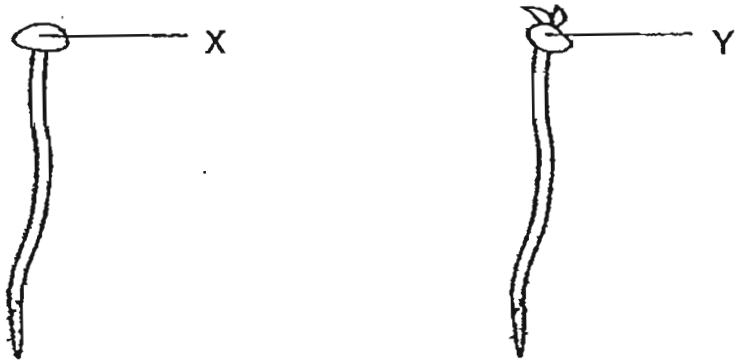
(1) The larva cannot live on land.

(2) The larva does not have wings.

(3) The larva does not look like its adult.

(4) The larva eats the same food as its adult.

8. The diagram below shows an Enoki mushroom with a part labelled X and a bean sprout with a part labelled Y.



Enoki mushroom bean sprout

Which one of the statements below is true about X and Y?

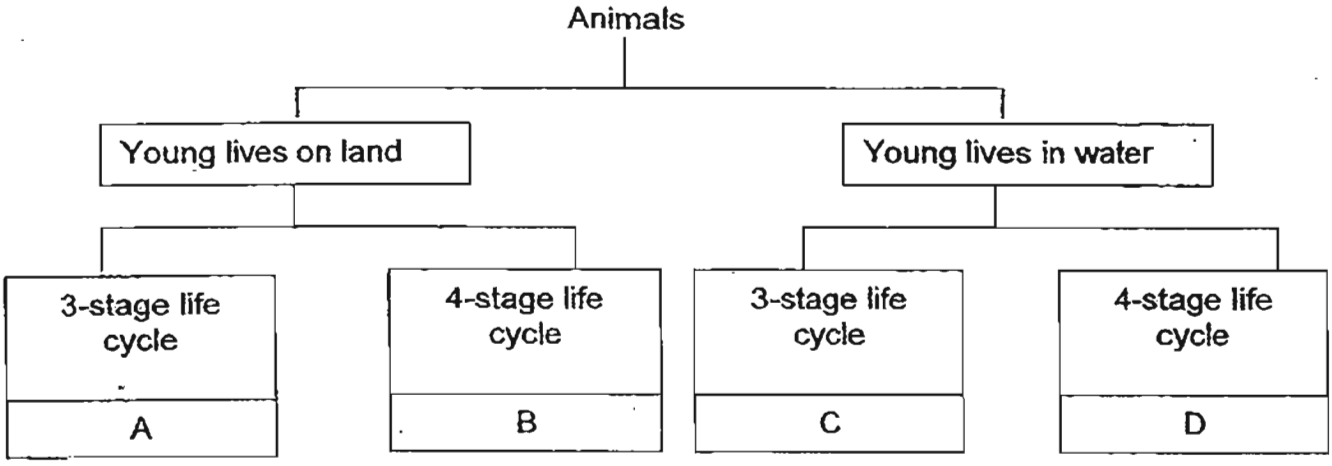
(1) X and Y are able to make food.

(2) X and Y provides food for the organisms.

(3) X needs light to grow but Y does not need light to grow.

(4) X helps the organism to reproduce but Y provides food for the organism.

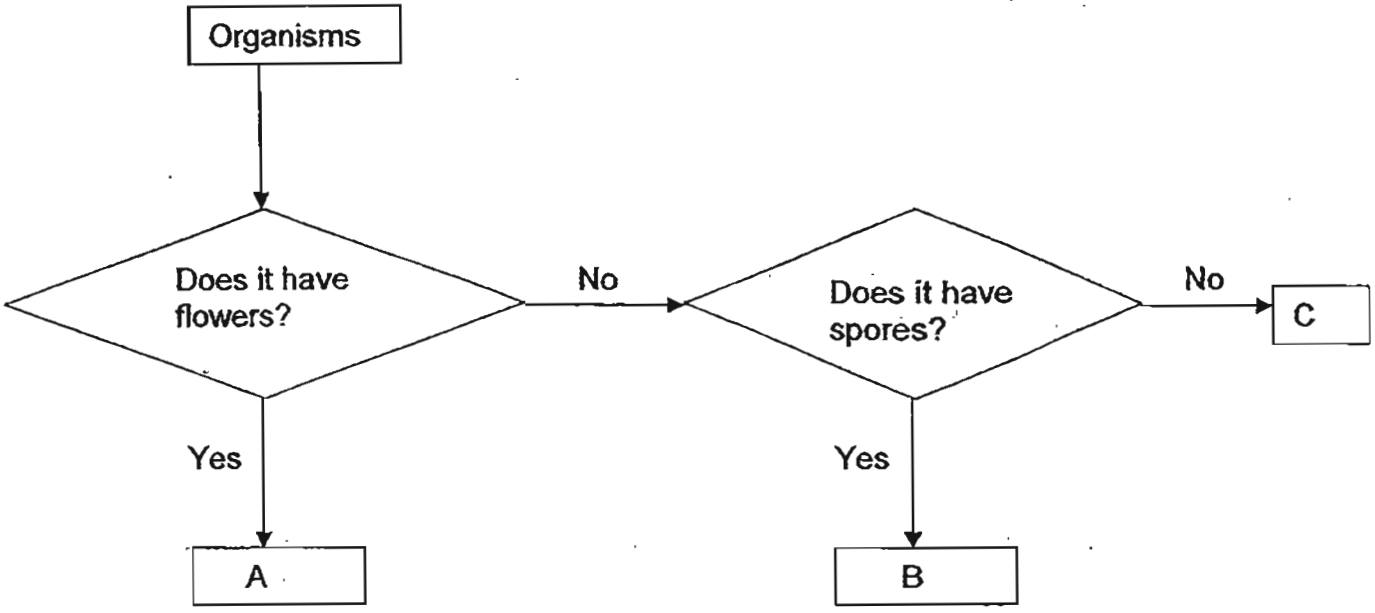
9. The classification chart below is used to group organism A, B, C and D.



Which of the following animals represent A, B, C and D?

	A	B	C	D
(1)	Cockroach	Butterfly	Guppy	Housefly
(2)	Grasshopper	Mealworm Beetle	Guppy	Mosquito
(3)	Ladybird	Mealworm Beetle	Goldfish	Dragonfly
(4)	Grasshopper	Butterfly	Housefly	Dragonfly

10. Study the flowchart below carefully.



Which of the following organisms represent A, B and C?

	A	B	C
(1)	Rose	Mushroom	Conifers
(2)	Ginger	Toadstool	Grass
(3)	Hibiscus	Staghorn fern	Ginger
(4)	Moss	Bird Nest fern	Mimosa

11. The following table contains information about insect X and Y. In an experiment, the eggs of insect X and Y were placed in different tanks. There were enough leaves, air and water for the insects to live for ten days.

	Insect X	Insect Y
Number of eggs	12	12
Number of days to develop from egg to an adult	8	6
Number of adults alive after 10 days	0	12

Assuming that all the eggs hatched and none of the insects escaped from the tanks, which one of the following statements is true about insects X and Y?

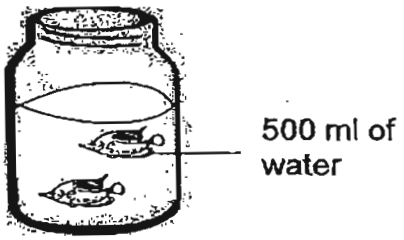
(1) Insect Y reproduces slower than Insect X.

(2) Insect Y has a shorter life span than insect X.

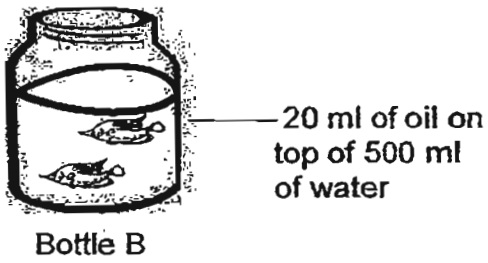
(3) Insect X has a 3-stage life cycle but insect Y has a 4-stage life cycle.

(4) The adult of Insect X does not eat leaves but the adult of insect Y does.

12. Ali conducted an investigation. Bottle A and B contained same type of fish inside 500 ml of water. Bottle B has a 20 ml layer of oil above its water. The bottles were not covered.



Bottle A

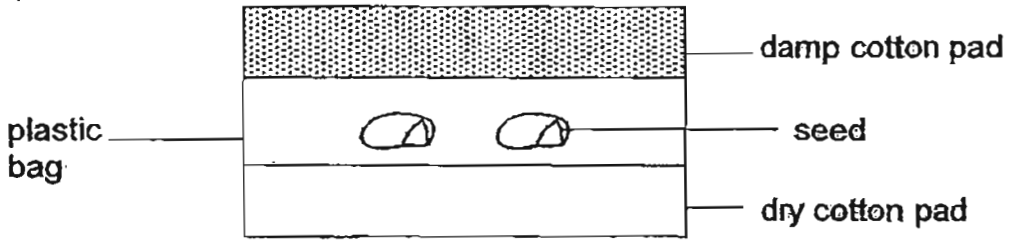


Bottle B

After a week, which one of the following observation and reason is **not** true of the investgation?

	Observation	Reason
(1)	Only the fish in Bottle A was still alive.	The oil prevented oxygen from dissolving into the water of Bottle B.
(2)	Both the fish in Bottle A and B died.	There was no food for the fish.
(3)	Only the fish in Bottle B was still alive.	The oil provides nutrient for the fish.
(4)	Only the fish in Bottle A was still alive.	The fish in Bottle A has more air than Bottle B.

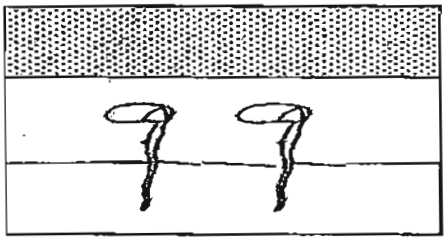
13. Seng Beng placed two germinating seeds on between a damp and dry cotton pads in a plastic bag on a table as shown below.



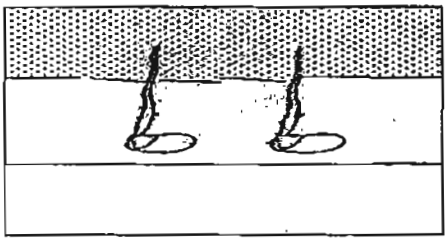
Top view

The experiment was placed on a table near a window. Which one of the following diagram correctly shows the growth of the bean seeds after 3 days?

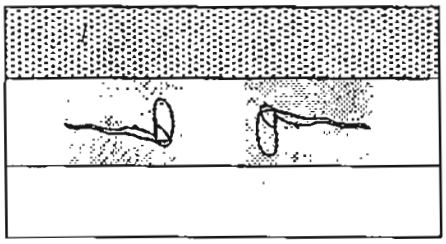
(1)



(2)



(3)



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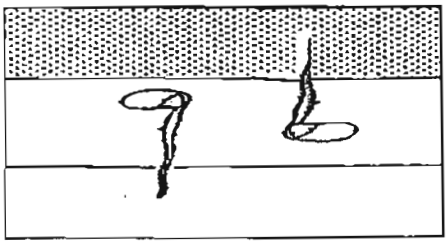
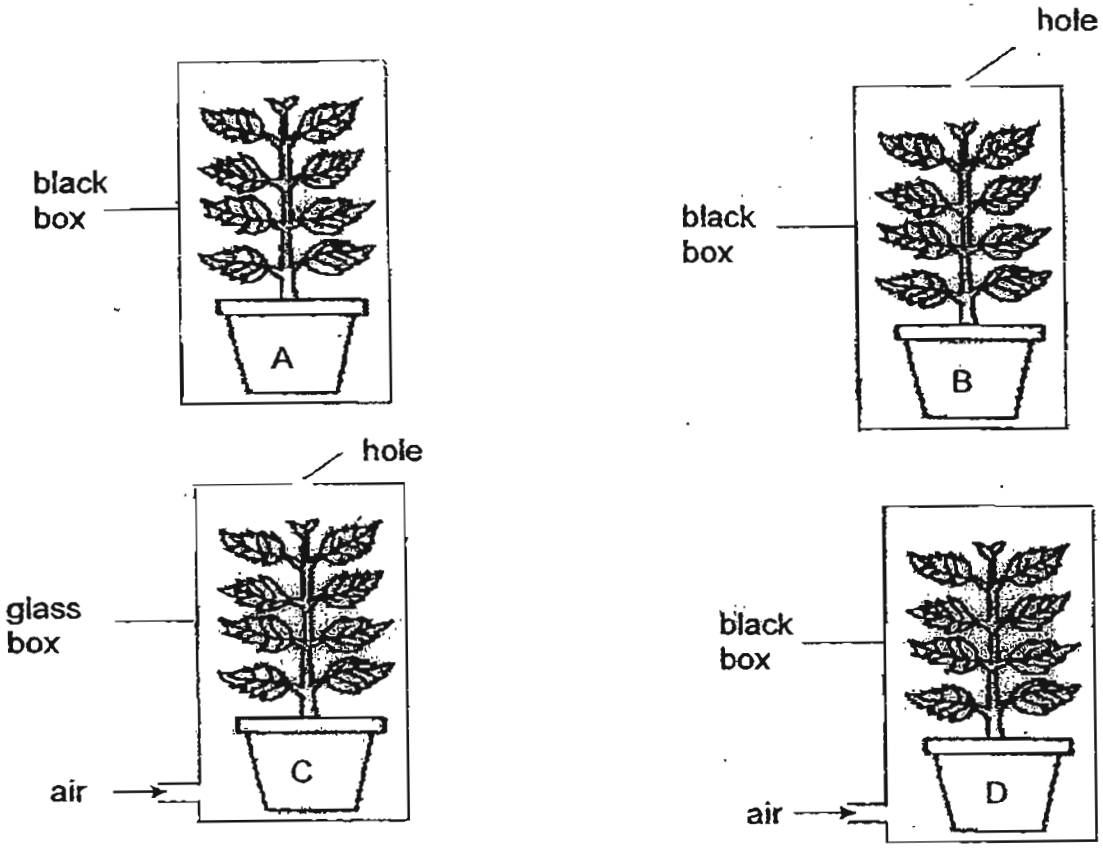


14. Isabelle wants to conduct an experiment to find out whether light will affect the rate of growth for a plant. Which of the set-ups, A, B, C or D should she use to ensure a fair test?



(1) A and B only

(2) A and D only

(3) B and C only

(4) B and D only

15. Amir collected some data about organisms P, Q and R and recorded it in a table. A tick (✓) means that the organism has the characteristic stated.

	Organisms		
Characteristics	P	Q	R
Its young moults.	✓	✓	✓
Has 3-stage life cycle	✓		✓
Spends at least one stage of its life cycle in water	✓		

Based on the information above, which of the following statements accurately describe the organisms P, Q and/or R?

A. P and Q can fly.
B. P may be a damselfly.
C. An example of Q is a moth.
D. The young of R looks like its adult.

(1) A and D only
(2) A and C only
(3) C and D only
(4) B, C and D only

16. Esabelle put some ice in a sealed container and left it in the basketball court under the hot sun. Which of the following change(s) would she likely observe after a few hours?

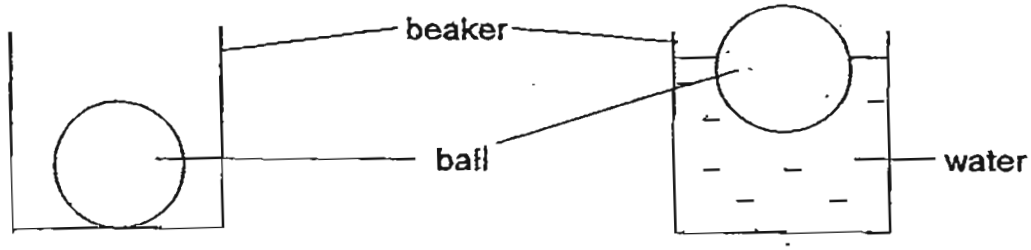
A: There would be a change in state.

B: There would be a change in mass.

C: There would be a change in the amount of matter.

(1) A only
(2) B only
(3) B and C only
(4) A, B and C

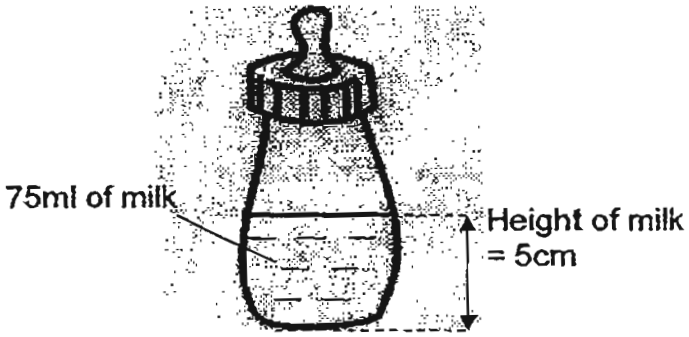
17. Zak conducted an experiment in his Science class. He placed a ball in a beaker and added water to the beaker as shown below.



Based on the result of his experiment, which of the following conclusion(s) is/are correct?
A: Matter takes up space.
B: The ball is made of plastic.
C: There is air inside the ball.
D: The ball is lighter than water.

(1) A only
(2) A and D only
(3) C and D only
(4) A, B, C and D

18. Brian poured milk from a bottle into a glass.



Milk bottle

Glass

If all the milk was completely poured into the glass, which one of the following statements is correct about the glass of milk?

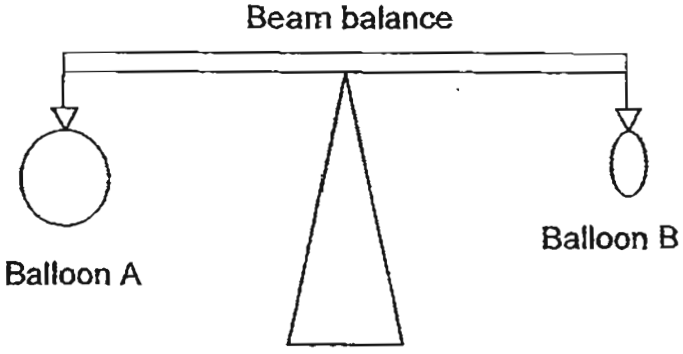
(1) The mass of milk in the glass is 75g.

(2) The volume of milk in the glass is 75ml.

(3) The height of milk in the glass will be 5cm.

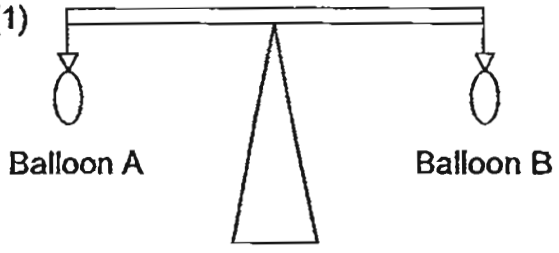
(4) The mass of the glass will increase because of the milk.

19. The diagram below shows the position of two balloons, A and B, on a weighing balance. Balloon A is inflated while balloon B is completely deflated.

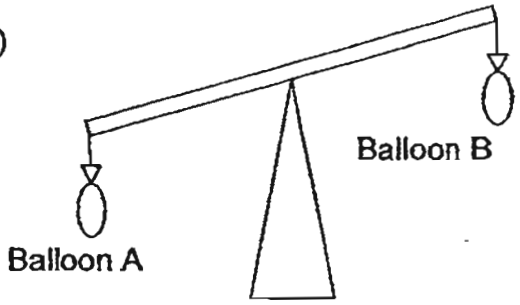


Juliana deflates balloon A completely. Which of the following pictures accurately shows what would happen to the weighing balance?

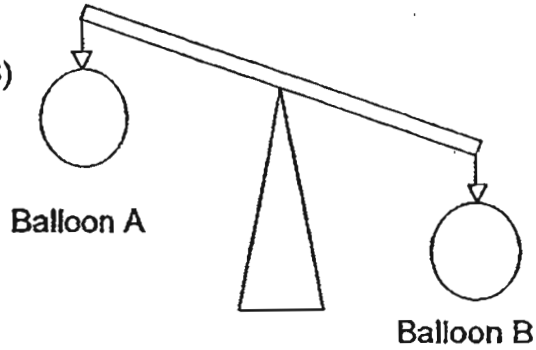
(1)



(2)



(3)



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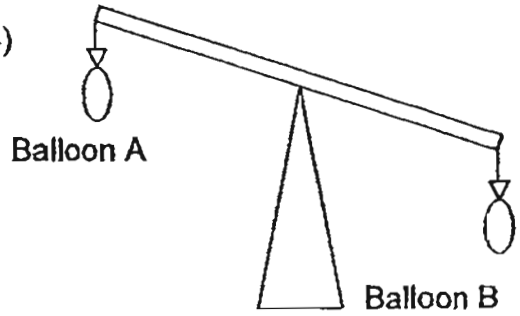
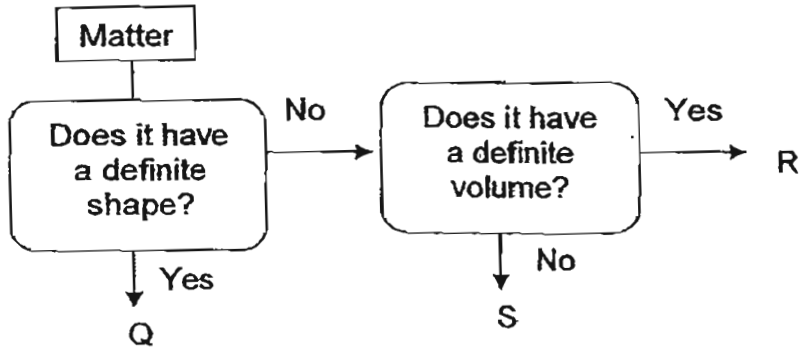


20. The following flowchart is used to classify 3 substances, Q, R and S, which were at room temperature.



Based on the information given, what could substances Q, R and S be?

	Substance Q	Substance R	Substance S
(1)	Balloon	Green Tea	Sponge
(2)	Plasticine	Grass Jelly	Nitrogen
(3)	Stone	Water Vapour	Oxygen
(4)	Magnet	Soya bean drink	Water Vapour

21. Davis blew some bubbles into a glass of water. He noticed that the bubbles rose to the surface. Which one of the following statements could Davis used to explain his observation?

(1) Air is matter.

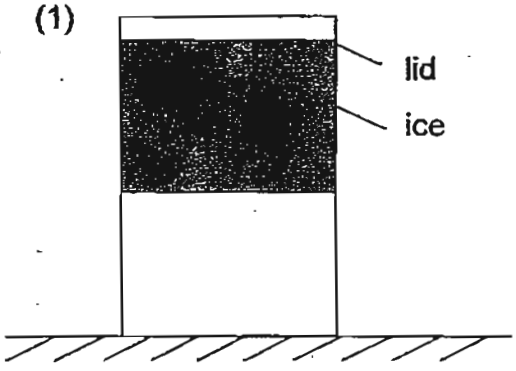
(2) Air has mass.

(3) Air takes up space.

(4) Air is lighter than water.

22. Cher Siong poured 500ml of water into his 1-litre water container. He then placed the container in the freezer. After all the water had frozen, he removed the container. Which of the following diagrams shows what he would NOT observe?

(1)



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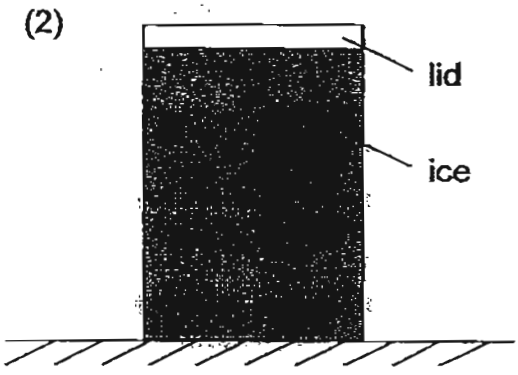

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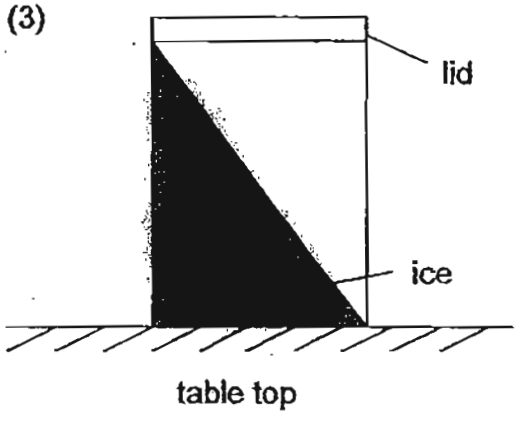

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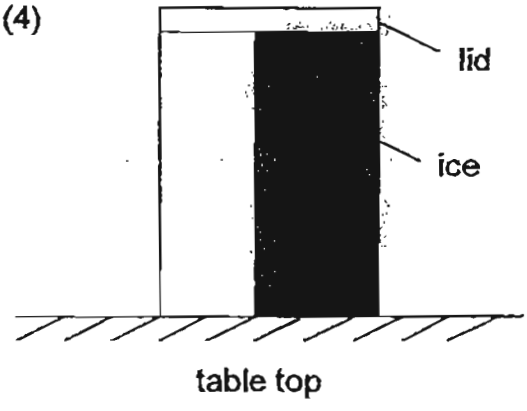
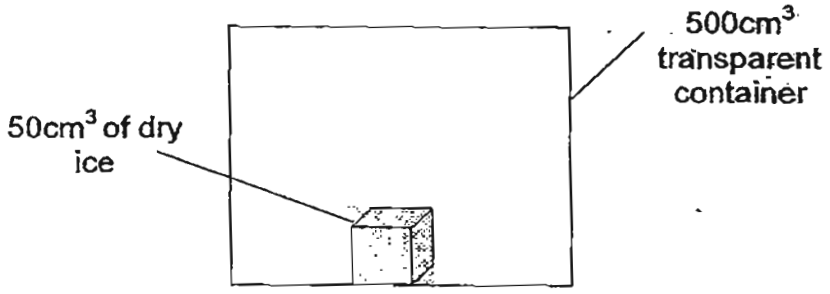


23. Dry ice is solid carbon dioxide. A group of pupils placed a block of dry ice in a sealed, transparent container as shown below. After a while, all the dry ice became carbon dioxide gas.



Amos: The volume of the carbon dioxide gas in the container is 500cm^3.

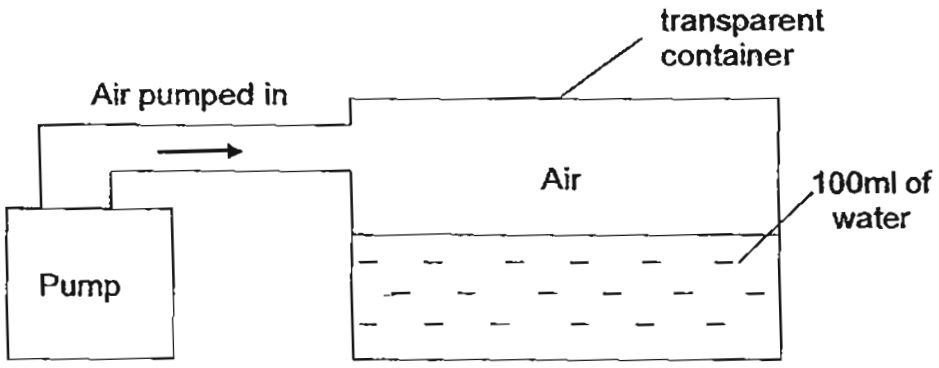
Bruce: There is nothing inside the container because I cannot see anything.

Cherie: The carbon dioxide gas will occupy only 50cm^3 because it can be compressed.

Which of the statement(s) made by the group is/are correct?

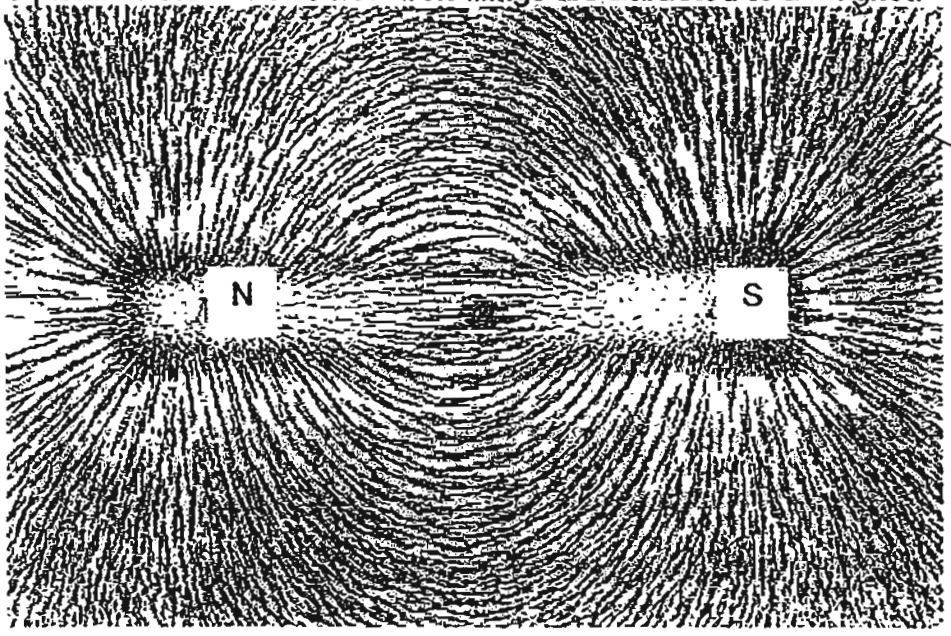
(1) Amos only
(2) Cherie only
(3) Amos and Bruce only
(4) Bruce and Cherie only

24. Betty poured 100ml of water into a transparent container through a valve. Using a pump, Betty then tried pumping air into the container.



Which one of the following observations is she likely to make?
(1) The water flowed into the pump.
(2) Bubbles started to form in the water.
(3) The water level in the container decreased.
(4) The water level in the container remains the same.

25. The picture below shows how iron filings are attracted to a magnet.

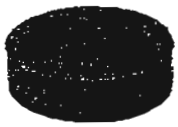


Which of the following magnets is likely to produce such a pattern?

A:

B:

C:



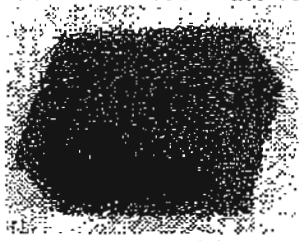
(1) B only

(2) C only

(3) A and B only

(4) A, B and C only

26. Samuel used the sponge below to clean dishes.



As he squeezed the sponge to get rid of the water, it became smaller. When he stopped squeezing, it went back to its original shape but felt a lot lighter. Based on his observation, which one of the following statements is true?

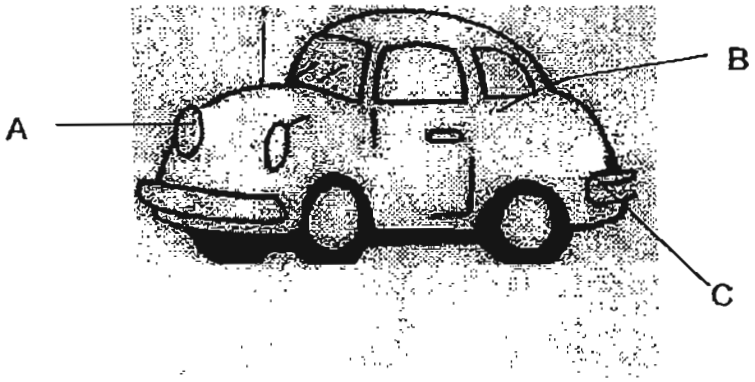
(1) The sponge is a solid as it has a definite volume.

(2) The sponge is a solid because it can be compressed.

(3) The sponge is a solid because it has a definite shape.

(4) The sponge is a solid because its mass can be changed.

27. The picture below shows different parts of a motor vehicle, labelled A, B and C.



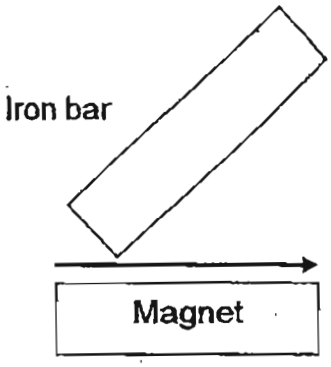
Which of the following shows the property of the material that is most appropriate to make each part of the car?

	A	B	C
(1)	reflects light	allows light to pass through	is flexible
(2)	allows light to pass through	is hard	is strong
(3)	is strong	allows light to pass through	can float
(4)	is hard	can float	is hard

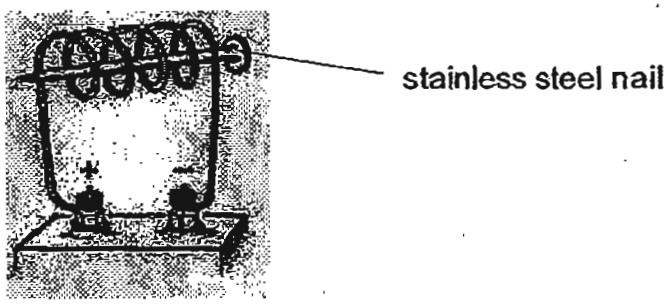
28. Tom used the methods A, B and C as shown below, to make a magnet.

Methods A:

Method B:



Method C:



Which one of the methods, A, B or C, could not be used to make a magnet?

(1) A only

(2) B only

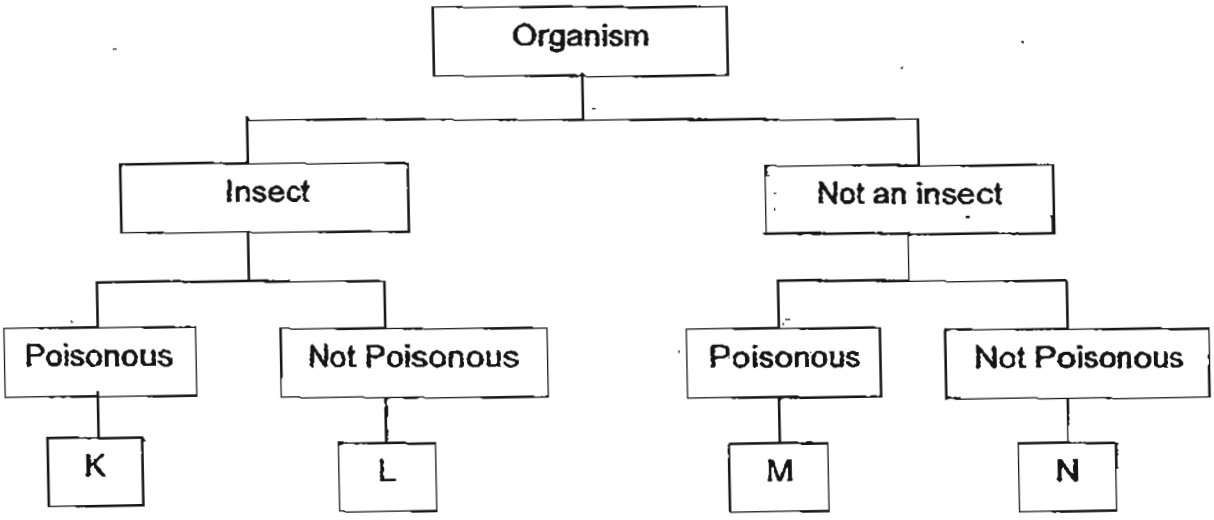
(3) B and C only

(4) A, B and C

29. Four classmates went to the Butterfly Park & Insect Kingdom at Sentosa. They saw the following organism, A. They then used a flowchart to classify organism A and other organisms.

Organism A

In the following flowchart, which letter, K, L, M or N, could represent organism A?



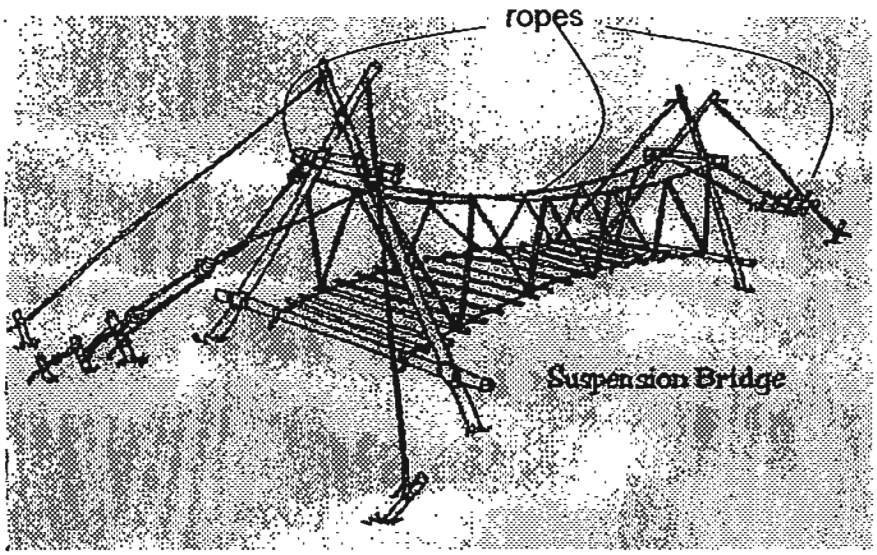
(1) K only

(2) M only

(3) M and N only

(4) K, L, M and N

30. Some scouts constructed a suspension bridge as shown below.



Which of the following properties of the ropes should the scouts consider in order to build a good suspension bridge?

A: Strength
B: Hardness
C: Flexibility
D: Ability to float

(1) A only
(2) A and C only
(3) B and C only
(4) A, B, C and D

南洋小學

NANYANG PRIMARY SCHOOL

PRIMARY FOUR SCIENCE

SEMESTRAL ASSESSMENT 1

2011

BOOKLET B

Date : 10 May 2011

Duration : 1 h 45 min

Name : _____

Class: Primary_____

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

Parent's signature: .....

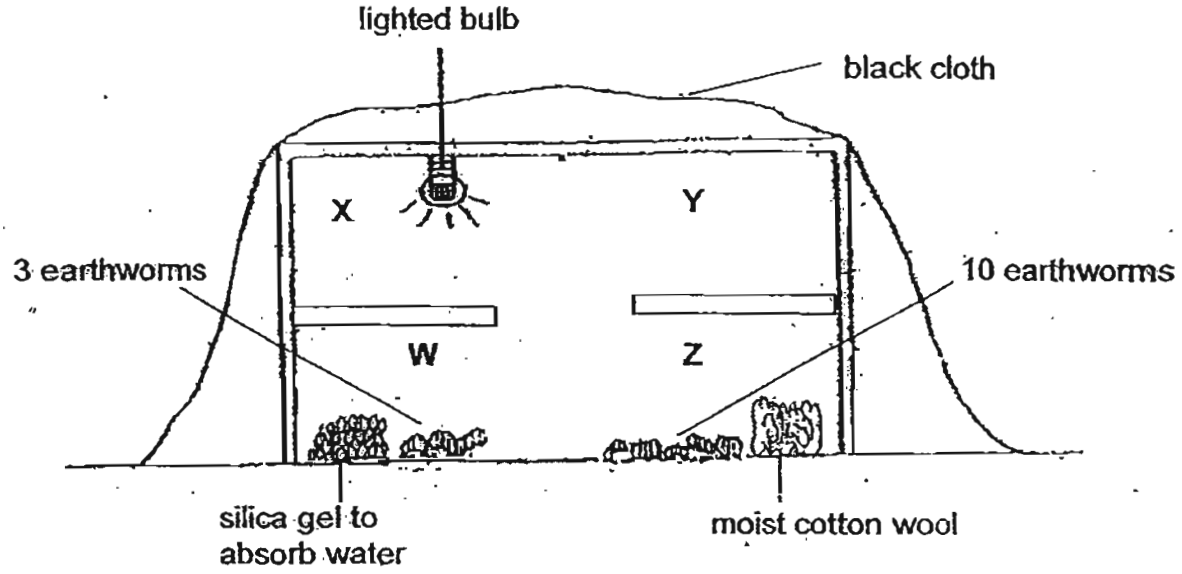
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 15 printed pages including this cover page.

Section B (40 marks)

Write your answers to questions 31 to 46 in the spaces provided.
Marks will be deducted for misspelt key words.

31. Mr Chan set up the experiment shown below to find out what are the preferred living conditions of earthworms. The box is divided into four parts, W, X, Y and Z. The earthworms are able to move freely to their preferred environment.



Side view of the box

(a) At the end of the experiment, Mr Chan found more earthworms gathered at Z as compared to other parts of the box. What are the conditions preferred by the earthworms?

[1]

_____

(b) Describe what Mr Chan could do to make all the earthworms move to W. [1]

_____

_____

32. Ashad planted 10 similar bean seedlings into four pots, A, B, C and D each. He carried out the following steps and recorded the data in the table below.

Step 1: Add equal amounts of fertiliser W, X, Y and Z into each pot.

Step 2: Weighed the mass of the 10 bean seedlings on 2 Jan 2011 before planting in pots.

Step 3: Water the plants with same amount of water daily.

Step 4: Weigh the mass of the seedlings on 2 Feb 2011.

Pot	Fertiliser	Mass of 10 bean seedlings on 2 Jan 2011 (g)	Mass of 10 bean seedlings on 2 Feb 2011 (g)
A	W	0.9	4.3
B	X	0.6	4.1
C	Y	0.7	2.3
D	Z	0.8	3.7

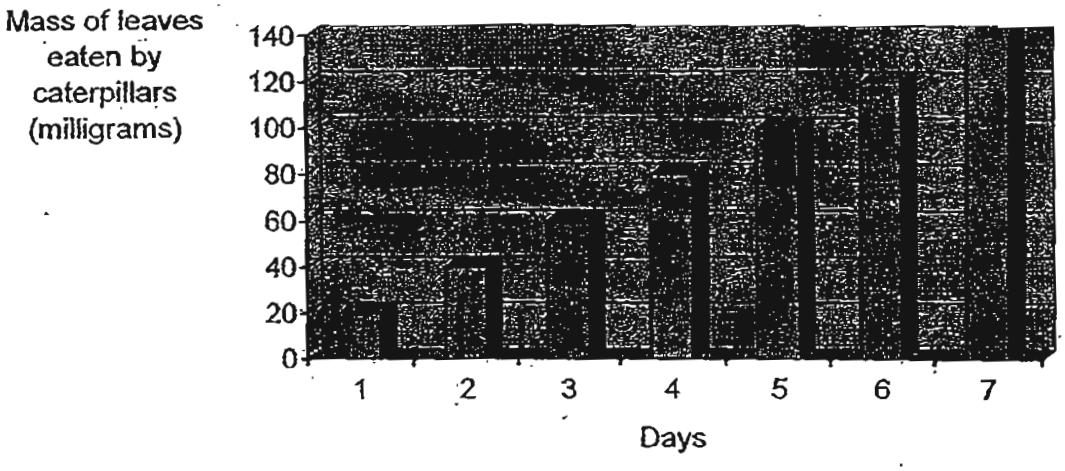
(a) What is the aim of the above experiment?

[1]

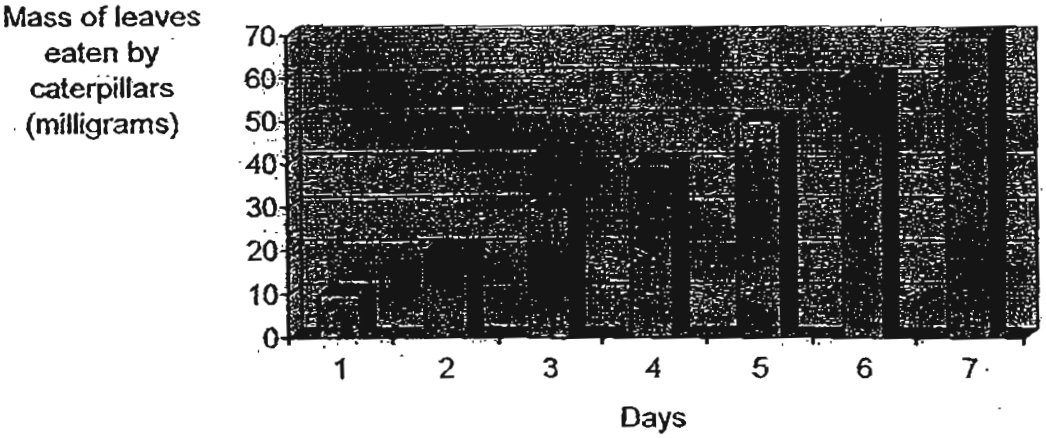
(b) Explain why he planted more than one bean seedling in each pot. Do not give the reason that he would have at least one seedling to collect data on 2 Feb 2011.

[1]

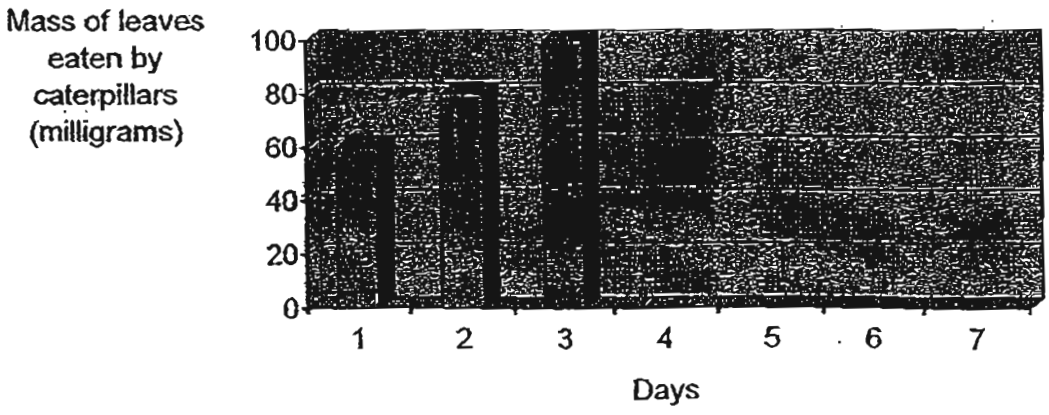
33. Three pupils, May, Ben and Jack brought home a potted plant and a container containing two caterpillars in it. Every day, the pupils would pluck leaves from the plant and feed the caterpillars. They also recorded the mass of the leaves before and after feeding. The graph below shows the mass of leaves eaten by the caterpillars each day.



May's graph



Ben's graph



Jack's graph

(a) If all the caterpillars turned to butterflies, describe and explain what happened to Jack's caterpillar on Day 4. [1]

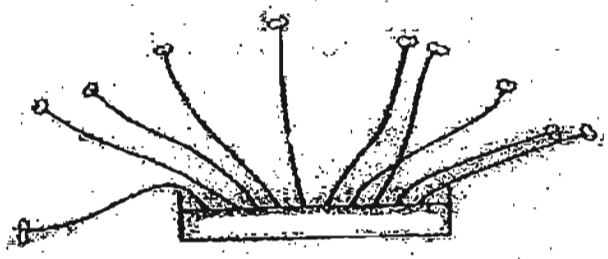
_____

(b) Compare the amount of food eaten by May's caterpillars and Ben's caterpillars. [1]

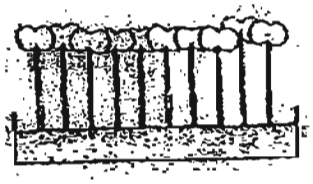
_____

_____

34. Ms Lim sowed same type of seeds into two glass dishes A and B. The picture below shows the growth of the seedlings at the end of 8th day of the experiment.



Dish A

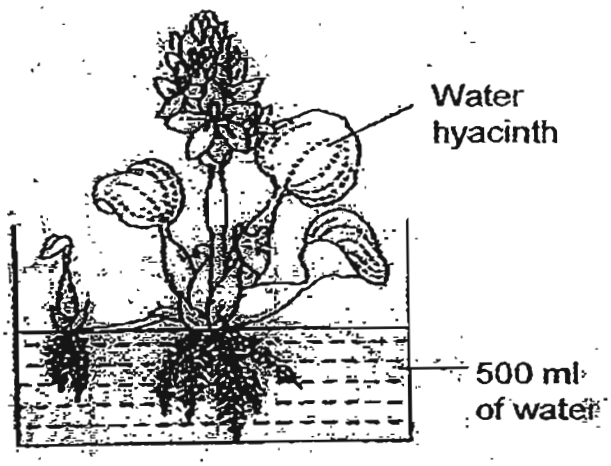


Dish B

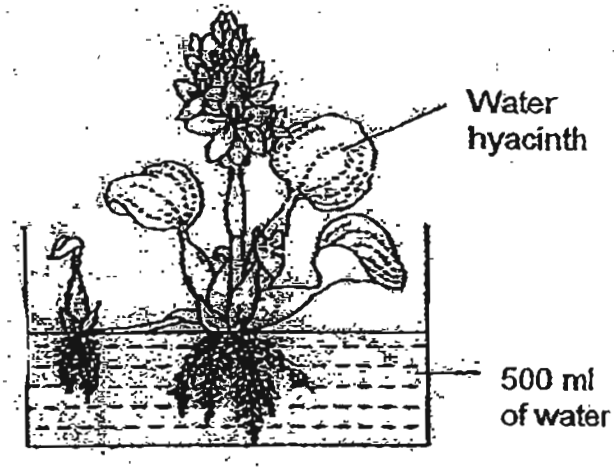
Based on her experiment, for each of the statements below, put a tick (✓) in the appropriate column to indicate if it is "True", "False" or "Not possible to tell". [3]

	Statements	True	False	Not possible to tell
(a)	Both dishes were placed at places with suitable conditions for germination to occur.			
(b)	It was a fair experiment.			
(c)	Dish A was placed near a window as the seedlings have longer stems than Dish B's seedlings'.			

35. Najib set up the following experiment as shown below. He used similar water hyacinths and placed them in a classroom. He wanted to show that water is taken in by the roots of water hyacinth's roots.



Control set-up



Set up A

(a) Describe how he should change set- up A to show that water is taken in by the water hyacinth's roots. [1]

_____

_____

(b) Describe what he should measure to show that water is taken in by the water hyacinth. [1]

_____

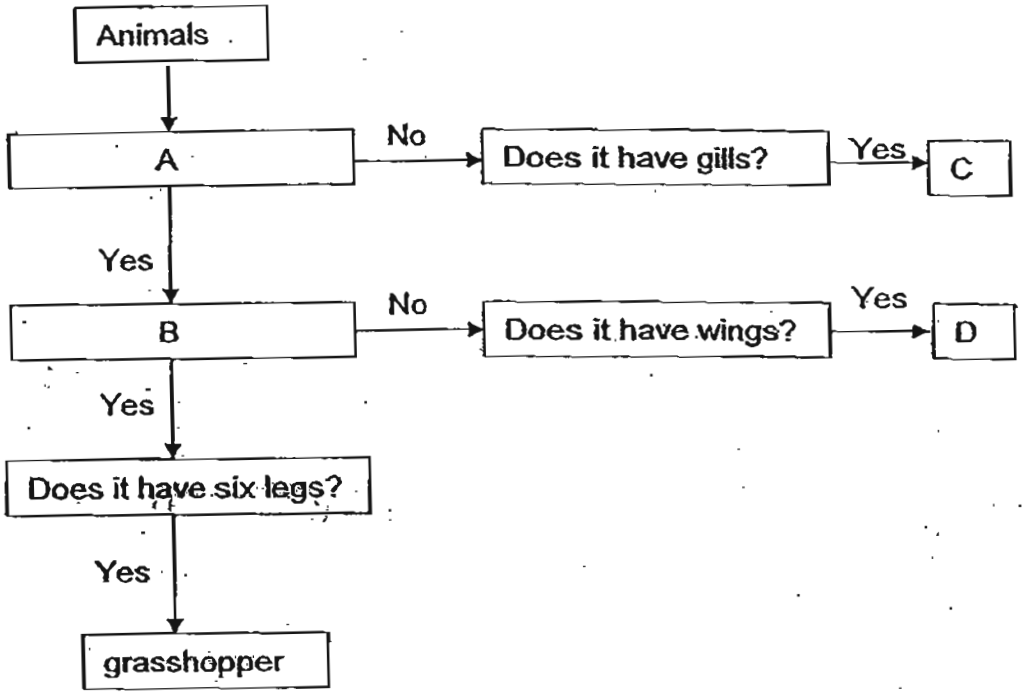
_____

(c) 400 ml of water was left in the control set after 8 hours. What would be the volume of water in set-up A after 8 hours?

[1]

_____

36. Study the flow chart below.



Fill in the boxes A and B with a suitable question. Write your answers on the lines below. [2]

A: _____

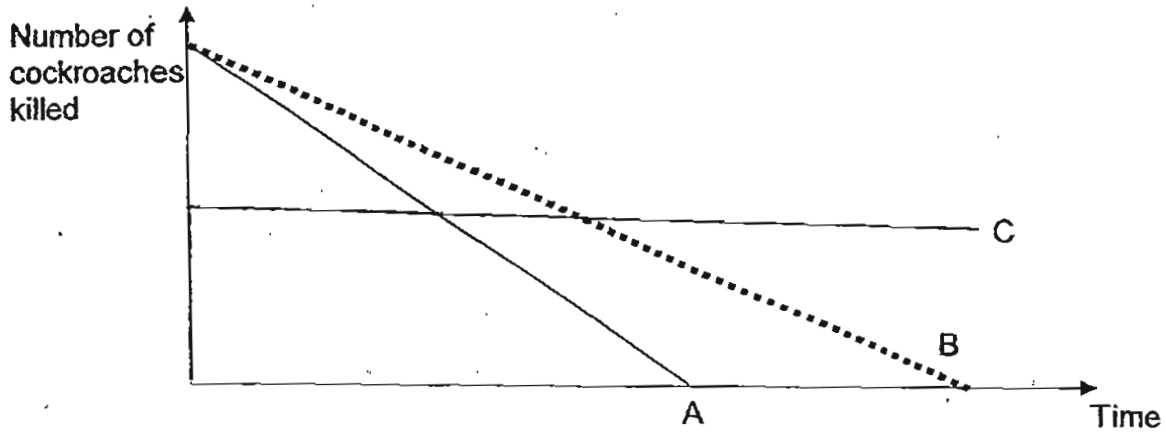
B: _____

Give an example of C and D. [2]

C: _____

D: _____

37. Bait contains poison which a cockroach eats and brings back to its nest. This, in turn, will kill the other cockroaches in the nest. Francis had 2 types of baits. He wanted to find out which bait is more effective in killing cockroaches. He conducted his experiment and plotted graphs shown below.



(a) A, B and C were graphs of his experiment. One of his set-ups was a control. Which line graph A, B or C is the graph for his control set-up? [1]

_____

(b) Which graph is the bait that is most effective in killing the cockroaches? [1]

_____

(c) Explain your answer to part (b). [1]

_____

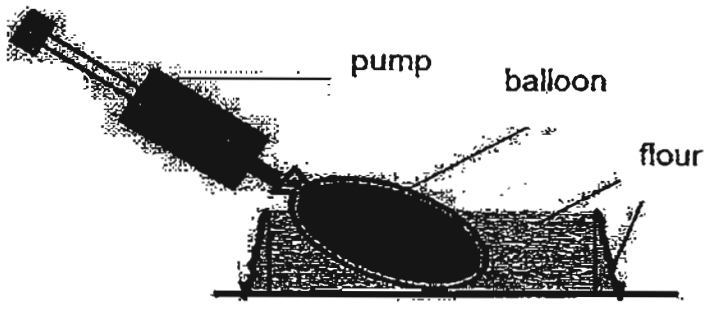
_____

(d) Insecticide is a spray that you use directly on the cockroach. It can effectively kill the cockroach on the spot. Based on the information given, state one advantage of using insecticide instead of using bait to kill cockroaches. [1]

_____

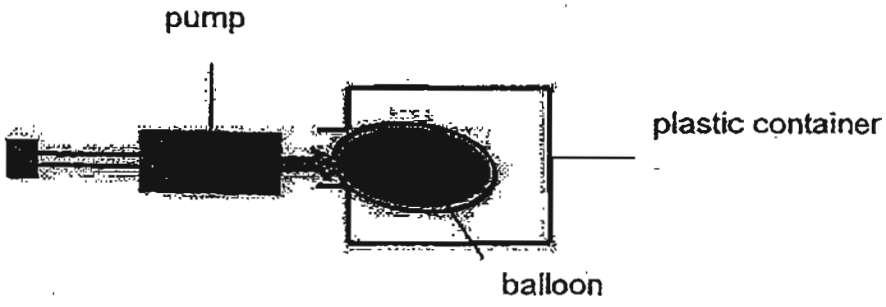
_____

38. John conducted an investigation as described. He attached a deflated balloon to a pump before he buried the balloon in a tray filled to the brim with flour. As he slowly pumped air into the balloon, flour was pushed out of the tray onto the table.



(a) Explain why the flour was pushed out of the tray as air was pumped into the balloon. [1]

Next, John attached another deflated balloon to the pump and placed the balloon in a plastic container. He pumped air into the balloon as shown below.



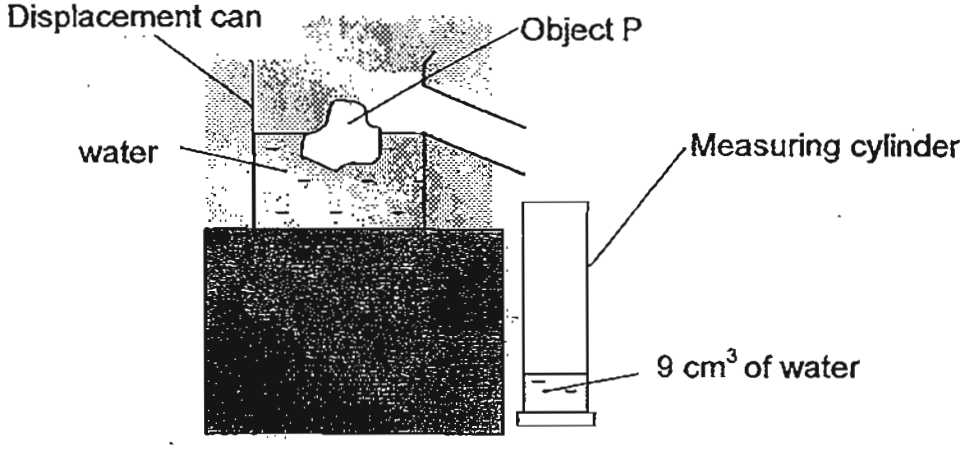
John found that no matter how hard he pumped, the balloon was not big although the balloon could be pumped to a bigger size outside the container. He could not make it fill up all the space in the plastic container.

(b) Explain why the balloon could not fill up the space in the container. [2]

(c) Describe what John could do to the same plastic container so that he could inflate the balloon to a bigger size when it is in the container.

[1]

39. Lynette conducted an experiment to find the volume of an object, P, that floats. The result of the experiment is shown below.



The amount of water displaced was 9 cm^3, she concluded that the volume of the object P was 9 cm^3. Her teacher said that the volume of the object P was more than 9 cm^3.

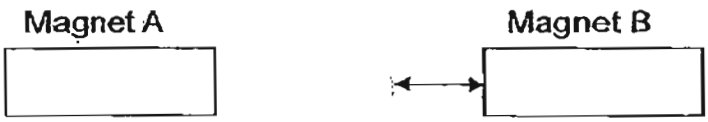
(a) Based on the above result, state a property that is similar between object P and a liquid? [1]

(b) State clearly the steps Lynette should have carried out for her to find the volume of the floating object correctly. [2]

Step 1	

40. Cavin placed two magnets close to each other. He held magnet A stationary and let go of magnet B. Magnet B moved.

Initial distance
when the two magnets were placed close to each other



Distance travelled by magnet B
when magnet A was held and magnet B was let go

He repeated his experiment by changing the initial distance between the magnets. He recorded the distance travelled by magnet B in the table below.

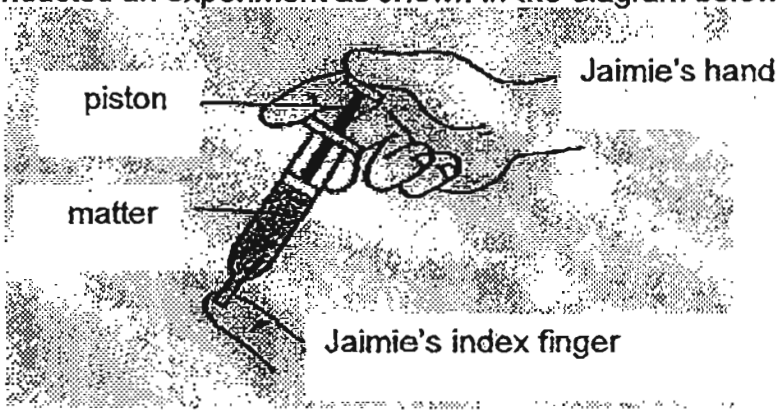
Initial distance between Magnet A and Magnet B (cm)	Distance travelled by Magnet B (cm)
1	10
2	7
3	F
4	2
5	0

(a) What is the aim of his experiment? [1]

(b) Based on the data given, what could the value of F be? [1]

(c) What happened when he conducted the experiment with the two magnets being 5cm apart? Suggest a reason for your answer. [2]

41. Jaimie conducted an experiment as shown in the diagram below.

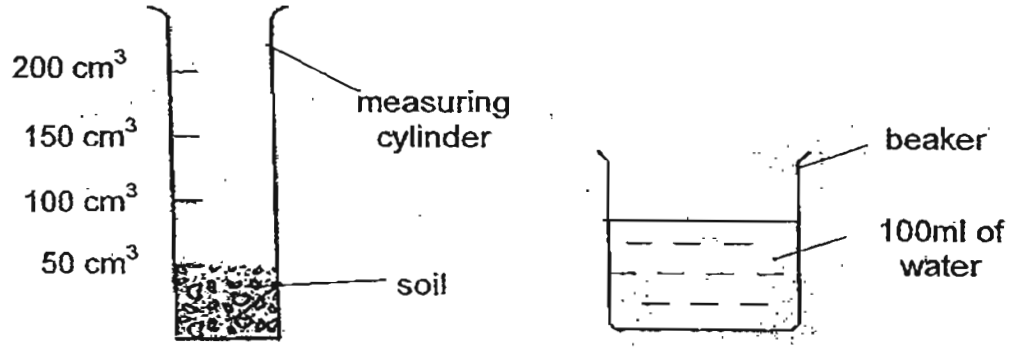


Jaimie filled the whole syringe with a solid and pushed the piston. She observes and records her result. She then repeats the experiment with a liquid and then a gas.

(a) What is the aim of her experiment? [1]

(b) State a hypothesis that Jaimie could make. [1]

42. Serene was given the following apparatus.



The measuring cylinder contained soil. She poured the water from the beaker into the measuring cylinder and observed the result.

(a) Would Serene observe bubbles when the water flowed into the soil? Explain your answer. [1]

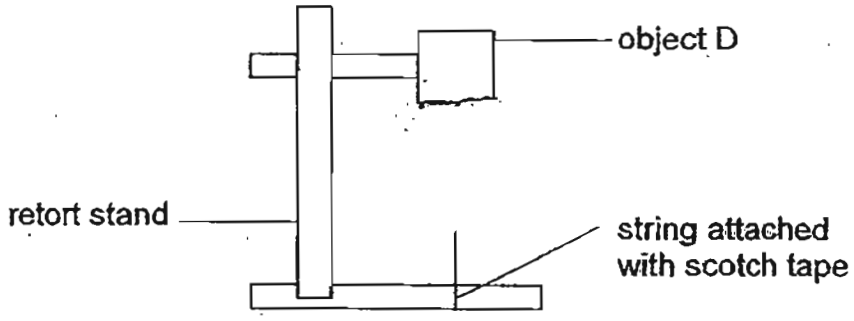
_____

_____

(b) What property of solid was demonstrated in Serene's experiment? [1]

_____

43. Jerome set up an experiment as shown below.



He observed that the paper clip was suspended in mid-air. Object D and the paper clip were made from different materials.

(a) Based on what Jerome observed, state what object D was. [1]

_____

(b) State a material that the paper clip is made of and explain your choice. [1]

_____

_____

Jerome was then given the following materials to conduct his next experiment.

Aluminum foil	Plastic sheet	A4 paper

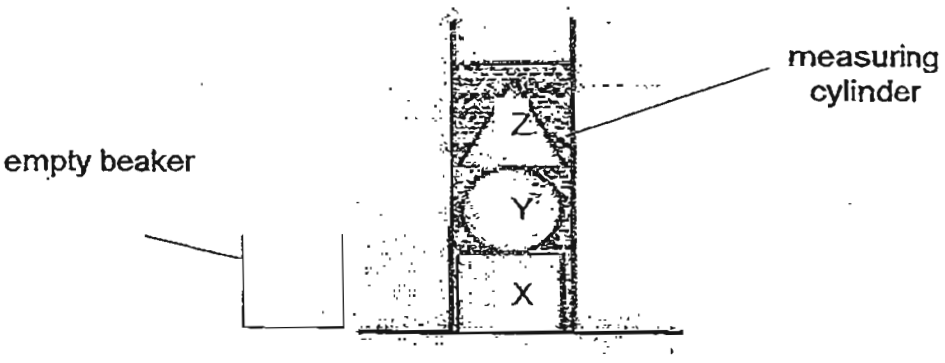
He held the aluminum foil between object D and the paper clip and observed the results. He then repeated his experiment with the other materials in the table above.

(c) What is the aim of his second experiment? [1]

_____

_____

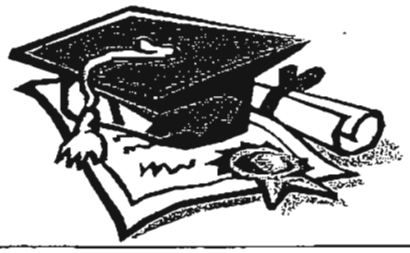
44. Grace was given solid X, Y, Z an empty beaker and a measuring cylinder of water as shown below.



In the table below, write down the steps Grace needed to carry out in order to find the volume of each object. [2]

Step 1	

Name of setters: Mr Melzone Chan
Ms Alice Chong



ANSWER SHEET

EXAM PAPER 2011

SCHOOL : NANYANG
SUBJECT : PRIMARY 4 SCIENC
TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
2	3	3	4	1	2	4	4	2	1	4	1	2	1	4	1	3

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	4	4	4	2	1	4	3	3	2	2	2	2

31)a)They prefer moist and dark places.
b)Switch off the bulb. Remove the silica gel and replace it with moist cotton wool.

32)a)It is to find out which fertiliser will enable plants to have more mass.
b)He wants to get reliable results.

33)a)It stopped eating and turned into a pupa.
b)May's caterpillars ate twice as much as Ben's.

34)a)F b)N c)F

35)a)Remove the roots in set up A.
b)The difference in the amount of water before the experiment and after.
c)415ml.

36)A)Does it lay eggs? B)Does it have feelers?
C)Guppy D)Eagle

37)a)Line graph C.
b)Line graph A.
c)It killed the cockroaches faster than B.
d)It can kill the cockroach on the spot, but using bait needs time.

38)a)Air occupies space, so when the balloon gets inflated, it will push some flour out.
b)There is air in the plastic container. Air occupies space and the balloon cannot become bigger.
c)Cut it open.

39)a)Both occupy space.
b)1)Fill the displacement can with water until the water level reaches the spout.
2)Tie a sinker to a string and lower it completely into the water.
3)Record the volume of water(V1)collected in the measuring cylinder.
4)Tie object P to the sinker and lower both completely into the water in the displacement can.
5)Record the new volume of water (V2)collected in the measuring cylinder
volume of the floating object = V2 – V1

40)a)It is to find out if changing the initial distance makes magnet B travel further.
b)4cm.
c)It remained the same. The magnets were too far apart.

41)a)To see which state can be compressed.
b)Only air can be compressed.

42)a)Yes. Water forces the air out of the soil.
b)Solid cannot be compressed.

43)a)A magnet.
b)Steel only magnetic materials can be attracted to magnets.
c)To find out if magnetism can pass through non-magnetic materials.

44)1)Put X, Y and Z in the empty beaker.
2)Record the volume of water in the measuring cylinder V1.
3)Put X into the measuring cylinder. Record the new volume V2. Volume of X = V2 – V1.
4)Put Y into the measuring cylinder. Record the new volume V3.
Volume of Y = V3 – V2.
5)Put Z into the measuring cylinder. Record the new volume V4.
Volume of Z = V4 – V3.